

Remarks

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested.

Claims 1 and 5-11 have been rejected under 35 U.S.C. §103(a) as being obvious over Uchiyama (US 6,163,409) in view of Alon (US 6,449,225). Claim 12 has been rejected under 35 U.S.C. §103(a) as being obvious over Uchiyama in view of Alon and further in view of Sasaki (US 5,493,554).

Claim 1 has been amended to include features from claim 12 and an additional feature to further distinguish the present invention, as recited therein, from the references. Further, claims 5-12 have been canceled without prejudice or disclaimer to the subject matter contained therein. Additionally, claim 13 has been added.

As a result, the above-mentioned rejections are no longer applicable to the claims for the following reasons.

Claim 1 is patentable over the combination of Uchiyama, Alon and Sasaki, since claim 1 recites an optical pickup device including, in part, a synthesizing unit comprising a single hexahedron beam splitter, the synthesizing unit being operable to make an optical axis of a first light beam emitted from a first light source coincide with an optical axis of a second light beam that is emitted from a second light source in a direction perpendicular to the first light beam and separate an optical axis of reflected light from an optical disk from the coincided optical axis. The combination of Uchiyama, Alon and Sasaki fails to disclose or suggest the synthesizing unit comprising the single hexahedron beam splitter as recited in claim 1.

Uchiyama discloses an optical head including first and second light sources 11 and 21. The optical head also includes a beam splitter 13-1, a collimator lens 14, a prism 15, a dichroic filter 19 and an objective lens 16. During operation, the beam splitter 13-1 receives a light beam from either the first or second light source 11 or 21 and guides the beam to the collimator lens 14. The collimator lens 14 focuses the beam into a parallel beam and directs the parallel beam to an outer surface of the prism 15. The parallel beam is reflected by the outer surface of the prism 15 through the dichroic filter 19 and the objective lens 16 and forms a beam spot on the surface of an optical disk. (See column 6, line 51 – column 7, line 34 and Figures 1 and 6A).

As discussed above, the beam splitter 13-1 does make the light beams from the first and second light sources 11 and 21 have parallel optical axes and guides the beams to the collimator

lens 14. However, there is no disclosure or suggestion in Uchiyama that the beam splitter 13-1 includes a single hexahedron beam splitter. Further, the light beams from the first and second light sources 11 and 21 are not emitted in directions that are perpendicular to each other. Therefore, Alon and/or Sasaki must disclose or suggest the synthesizing unit comprising the single hexahedron beam splitter in order for the combination of Uchiyama, Alon and Sasaki to render claim 1 obvious.

Regarding Alon, it discloses an objective assembly 38 including two prism mirrors 36 and 37 and an objective lens 18. Alon also discloses a beam splitter 14 which redirects light reflected from an optical disk 16 to an optical sensor 20. (See column 5, line 65 – column 6, line 13 and Figure 3B).

In the rejection, the prism mirror 37 of the objective assembly 38 is relied upon as corresponding to the claimed light path length conversion unit. However, it is clear that the beam splitter 14 does not include a single hexahedron beam splitter and does not make an optical axis of a first light beam emitted from a first light source coincide with an optical axis of a second light beam that is emitted from a second light source in a direction perpendicular to the first light beam and separate an optical axis of reflected light from an optical disk from the coincided optical axis. Therefore, Sasaki must disclose or suggest the synthesizing unit comprising the single hexahedron beam splitter in order for the combination to render claim 1 obvious.

Sasaki discloses two semiconductor lasers 1 and 6 operable to emit light to a dichroism beam splitter 9. The beam splitter 9 makes the optical axes of the light from the two semiconductor lasers 1 and 6 parallel to each other and directs the light to a disk 5. Further, the dichroism beam splitter 9 separates reflected light from the disk 5 back towards the semiconductor lasers 1 and 6 from which the light originated. Sasaki additionally discloses two beam splitters 2 and 7 associated with the semiconductor lasers 1 and 6, respectively, which redirect the respective reflected light to photodetectors 52 and 53. (See column 5, line 28 – column 6, line 25 and Figure 1).

Based on the above discussion, it is apparent that Sasaki uses three separate beam splitters 2, 5 and 7 to make the light from the two semiconductor lasers 1 and 6 achieve a parallel optical axis and redirect the reflected light from the disk 5 to the photodetectors 52 and 53. On the other hand, claim 1 recites that the synthesizing unit comprises a single hexahedron beam

splitter, the synthesizing unit being operable to make the optical axis of the first light beam emitted from the first light source coincide with the optical axis of the second light beam that is emitted from the second light source in the direction perpendicular to the first light beam and separate the optical axis of reflected light from the optical disk from the coincided optical axis. None of the beam splitters 2, 5 and 7 of Sasaki performs these functions. Therefore, Sasaki fails to address the deficiencies of Uchiyama and Alon. As a result, the combination of Uchiyama, Alon and Sasaki fails to render claim 1 obvious.

One of the benefits of the optical pickup, as recited in claim 1, is that it allows for greater miniaturization due to the utilization of single hexahedron beam splitter, as well as employing a light path conversion apparatus which shortens the optical path length of the optical pickup.


Because of the above-mentioned distinctions, it is believed clear that claims 1 and 13 are patentable over the references relied upon in the rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1 and 13. Therefore, it is submitted that claims 1 and 13 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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